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On the Elites in the Eastern European Post-Communist Countries Political Elites in the Eastern European Political Regimes after the Fall of the Berlin Wall: An Interdisciplinary Methodological Approach¹

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Abstract

This paper presents interdisciplinary methodological research concerning the emergence and dynamic behavior of elites in the democracies in the Central and Eastern European (CEE) countries. The research on political elites has been mainly guided so far by the interest in their origins, characteristics, functionalities, and political roles. These studies have raised several methodological questions concerning the collection of data on the political elite, and the validity and reliability of the survey data. Our approach focuses instead on a complexity-based approach by studying the social and political generative mechanisms which could illustrate elites' emergence and dynamics. To this goal, we introduce a research methodology based on simulation and agent-based modeling which (i) constructs an artificial polity, and (ii) investigates the elites' influence on the artificial polity's outcomes. This type of approach enhances the study of some issues which are too complex to be studied by classic analytical and empirical means, like the emergence and self-organization of (political) elites as context-dependent and path-dependent phenomenon in the Central and Eastern European post-communist societies. After the 1990s, the democratization processes in these countries have often been questioned for their poor capacity to overcome the privilege-generating mechanisms which have affected the newly-constructed democratic institutions. Our approach identifies the privilege-generative mechanisms aimed to obtain and retain power in the post-communist polities in Eastern and Central Europe. The methodological issues approached in this experimental setting are concerned with (a) the construction of the context as an artificial polity, (b) the generation of the elites, and (c) the study of their dynamics.

Keywords: elite, agent-based modeling, artificial polity, artificial society



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1. Introduction

Our model combines political methodology, political science and political culture theories in studying the impact of political elites on the operational dynamics of a polity, especially of the typical Central and Eastern European polity after the fall of the Berlin Wall. Developed as a part of a large research project on Artificial Polity simulation modeling (Voinea, 2017), the elite issue has been emphasized by the particularities of the democratization phenomena in the CEE countries after 1989. The role played by the elites in the demise of the communist regimes in the CEE countries is subject to study but also to controversies. However, the impact of the elites on the democratization process is undoubtedly essential for understanding the transitional processes, the different quality of the democracy, and the degree of consolidation of democracy reached by different countries in the eastern half of Europe after the fall of the iron curtain. Our approach provides a systematic approach on the elites by employing the *Artificial Polity Model (APM)*, from now on) for explaining the role of the elites in the dynamics of the CEE democratic polities.

Both *elite* and *polity* issues have been approached in the past two decades with the aim of evaluating and explaining the role of the elites in the demise of the communist regimes and in the complex democratization processes which have followed it. Along with the transition to democracy and the democratic consolidation processes, the CEE regimes have been decisively impacted by corruption phenomena like political clientelism, patronage, and state capture (Voinea, 2015). In many countries, research on democratization has necessarily focused on these issues too, some authors trying to identify a relationship between (political) elites and the dynamics of political corruption phenomena in Serbia, Bosnia, Hungary, Czech Republic and Romania. In many cases, the modeling approaches have been mainly theoretical, focusing on the essential aspects characterizing both polity and elite in the unfolding of the political change phenomena.

There are several authors who revise classic elite theories in order to achieve new theoretical perspectives and shed light on the role elites played in the major political change phenomena during the 1990s and afterwards (Field, Higley and Burton, 1990; Higley and Burton, 1998; Higley and Lengyel, (Eds.), 2000; Dogan, 2003). Other authors focus, identify and explain mainly the phenomena specific to the Central and Eastern European post-communist countries which involve the role of elites and their influence on the type and performances of democratization processes in these countries (Steen, 1997; Szeleny, Eyal and Townsley (Eds.), 1998; Adam and Tomsic, 2002; Adam, Kristan and Tomsic, 2009; Lengyel and Ilonszki, 2010, 2012). These works have provided a rich basis for the experimental setup and the simulations reported in this paper.

As one of the elites' essential characteristics consists in their capacity of decisively influencing the operation and the outcomes of a polity, our paper presents a methodological contribution to the research concerning the typology, behavior and dynamics of the elites: this methodological approach is based on an *artificial polity*, that is an agent-based system able to simulate the operation and the dynamics of a real polity. The main aim of this paper is to provide a systematization of the findings concerning elite simulation modeling from the polity modeling research project². The *Artificial Polity Model* (Voinea, 2013b, 2017) has been employed for explaining some of the most relevant political phenomena in the CEE countries after

² The research project has been initiated within the framework created by the EEEW-PAM'2012 in the UEFISCDI exploratory workshop project PNII-IDEI/WE_PN-II-ID-WE-2012-4-046/2012 conducted by the Author, and has been developed ever since in the Faculty of Political Science, University of Bucharest, Romania.

1989: political corruption and political clientelism (Voinea, 2013a), transition from the communist autocracies to democracy in Eastern Europe (Voinea, 2014), and state capture (Voinea, 2015). Each of these approaches has provided a perspective over the role played by the elites in the real polities, on the one hand, and a research dimension in developing an artificial polity model.

APM aims to explain several elite phenomena in terms of the relationship between elite action and polity outcomes: elite influence on the polity operations, elite internal relationships and struggle for power, elite settlements, and elite convergence. Among these phenomena, the democratization processes in the Eastern Europe brought to the attention of the research communities some particularities which appear as key factors in understanding where are the Eastern European democracies heading to.

One such particularity is the phenomenon of *simulated democracy* (Lengyel and Ilonszki, 2010, 2012) which especially concerns the Eastern European elites after 1989: as the authors present in detail this phenomenon, it essentially consists in a qualitative difference between elite's claims and their actual political behavior. Put it in other words, the simulated democracy appears as a political phenomenon which concern the political elite's claims concerning the assumed democratic principles and democratic behavior at both individual and institutional level, while such claims are not acknowledged by the public perception, nor are they supported by the outcomes of the evaluations of both individual and institutional democratic performances and operation. After the demise of communism, in the CEE new democracies it is often the case that both political elites and the democratic institutions prove to operate in dissonance with the established democratic principles. Political corruption, among others, is considered to be a major source of the simulated democracy phenomenon at both political elite level and at the political institutional level.

Another phenomenon is the *elite settlements* at different, but relevant periods of time in Eastern Europe, like the 1990s and the years between 2005-2010 which have been dominated by the economic and financial crises.

Finally, our interest goes to a third phenomenon, the so-called *elite convergence*, which appears as a desirable outcome of the elite action in the democratization of the Eastern Europe.

The interest in elite studies comes from the need to understand some of the essential aspects of the democratization and of the type and quality of democracy in the Eastern Europe after the fall of the iron curtain and especially in the actual context, hardly dominated by the efforts to reform the EU and the efforts to face the most relevant challenges of our times: massive migration, refugees condition, dynamics of the world economic and military powers, and terrorism. Elite simulation modeling brings forth research issues which could only be approached in interdisciplinary frameworks at both conceptual and operational levels. It could also help in understanding the political and social phenomenology of society and polity change in terms which go far beyond the explanative power of the classic analytical approaches.

This paper is organized as follows: *Section 2* presents a general perspective over the elite concept and theories thus establishing the research theoretical framework of our agent-based simulation modeling approach with a special focus on the research literature and authors mainly concerned with the elite modeling. The general details of the conceptual framework are further clarified in the subsections as follows: *Subsection 2.1* presents the new elite paradigm as the inspiring research literature source and the conceptual support for our modeling approach. *Subsection 2.2* specifies the elite definitional perspective adopted in this paper as support and framework for the methodological goal of the paper. *Subsection 2.3* states that the elite in the CEE countries and the role they played in the demise of communism and the transition to democracy as one of the main interests of the research reported in this paper. *Subsection 2.4* makes a brief review of the elite modeling research literature with the aim of describing the relevance of the

methodologies and technologies provided by the sciences of the artificial in the simulation-based modeling research developed lately within the areas of social and political sciences. *Section 3* describes the methodological goals of this approach by describing the *Artificial Polity Model* (Voinea, 2014; Voinea, 2017) and its role in the development of elite simulation modeling research. *Section 4* identifies and briefly explains the research questions which have driven the development of our elite simulation modeling approach. *Section 5* makes a detailed presentation of the *Artificial Polity Model* so that the reader could better understand *why?* and *how?* this model has been employed in the elite simulation modeling studies reported in this paper: *subsection 5.1* describes the definitional approach from an operational point of view, *subsection 5.2* briefly describes the conceptual model of the *Artificial Polity*, *subsection 5.3* describes the dynamic space of the elite simulation model, *subsection 5.4* describes the operational aspects of the relationship between elite and polity in our approach. *Section 6* provides technical details on the operational description and workings of the elite agents in the simulation model. *Section 7* describes early elite simulation modeling experiments by providing details on the *briberyscape model* (Voinea, 2013b) and the modifications needed to transform it into an elite simulation model. *Section 8* describes ongoing research on elite simulation modeling by reporting the advanced experimental setup based on a more complex version of the artificial polity model. *Section 9* draws several conclusions from the elite simulation modeling experimental research and identifies future developments of the current artificial polity model as a complex simulation tool with relevant explanative power in elite research.

2. Elite: Concept, Theory, Modeling

Elite theory has been introduced by the classic works of Vilfredo Pareto (1961, 1991, 2013), and Gaetano Mosca (1939/2011). Since then, elite theory has been revisited and enriched with new approaches by several authors, among whom Michels (1912/1962) is the most relevant author to our study. Our approach has been mainly inspired by the new elite paradigm as defined by John Higley and his collaborators (Higley, 2008; 2014; Higley and Pakulski, 2012; Field, Burton and Higley, 1990; Higley and Burton, 1987, 1997; Higley and Lengyel, 2000; Lengyel and Higley, 2006).

2.1 Elite Concept and the Classic Modeling Approaches

The new elite paradigm (Higley, 2008) as it is addressed in our approach allows for the operationalization of elite behavior and the role elites played in the workings of the state.

The new elite paradigm has provided support to the project's aim of modeling the impact of elites on the polity outcomes before and after the fall of the iron curtain. Elite modeling could thus provide for a better understanding of the post-communist societies of the Central and Eastern Europe.

2.2 The Concept of "Elite": The Definitional Perspective

In our approach, the notion of "elite" is defined in conformity with the new elite paradigm concepts:

"Elites may be defined as persons who, by virtue of their strategic locations in large or otherwise pivotal organizations and movements, are able to affect political outcomes regularly and substantially"

(Higley, 2008)

Following the new elite paradigm as introduced by John Higley and collaborators, we have considered a fundamental elite characteristic, namely the type of the elite-generative source in the polity architecture. As generative sources we consider the political parties, electoral and state-command

structures, business and banking institutions, intellectual and academic, military, social and civic organizations. This approach has provided enhanced support to our polity simulation studies which cover several types of political regimes: autocratic, semi-democratic (electoral democracy) and liberal democracy. Considered altogether with the ideological attribute of the political elite, this characteristic helps in the proper operationalization of elite behavioral tendencies which count most in the emergence of elite settlements, transformations, and convergence (Burton and Higley, 1987; Higley, 2008).

2.3 Elites in the Central and Eastern European Countries

One relevant characteristic of the old elites in the CEE countries (former *nomenklatura*) in the years after the fall of the iron curtain consists in their capacity to penetrate the political party systems after the demise of communist regimes. Several authors studied the roles they played in the CEE countries and their influence on the development of market economy. Another distinctive characteristic is that the members of the former *nomenklatura* in the CEE countries have succeeded after the 1990s to achieve high social, political and economic statuses (i.e., members of the Parliament, Government, courts, political parties, etc.). Moreover, they deliberately tried (and many have succeeded) to hide or change their true ideological identity and claim to have a different ideology, one closer to liberal principles and oriented toward the center ideologically-situated political parties. This phenomenon of transformational ideological identities allowed them to “simulate” attachment to democratic principles, parties and economic programs. However, latter behavior proved that many of them used this strategy to break democratic norms and rules for taking personal benefits or obtain personal or group privileges. Lengyel and Ilonszki have introduced a new concept, called “simulated democracy” (Lengyel and Ilonszki, 2010; 2012) which describes this phenomenon:

“[...] introduced the notion of “simulated democracy” as an analogy to Lajos Leopold’s “simulated capitalism”. This describes a situation in which the institutions of democracy are working, but with a low level of efficiency, because the elites and important social groups systematically violate the democratic norms. In line with the new elite paradigm, we also claim that it is largely the responsibility of the governing elite whether the democratic institutions are consolidated in their “working form”, or whether they remain in a state of simulation, gradually reduced to bare facades and institutional skeletons.”

(Lengyel and Ilonszki, 2010)

2.4 Elite Modeling: Brief Methodological Research Literature Overview

Political elite simulation modeling could be identified in various approaches covering various qualitative and theoretical issues from decision-making to conflict emergence. Not all such models are explicit elite modeling approaches, much of them are approaches on the ruling elites as pressure groups or interest groups³. Classic methodological approach in elite studies is based on empirical analysis and survey data (Hoffmann-Lange, 1985) and the advanced analysis methods like, for a good example, those based on sequence analysis (Jackle, 2015). Other authors approach the elite modeling from a mathematical and computational perspective aiming at analyzing the impact of the ruling elites in situational contexts (Gabbay, 2013).

Agent-based polity simulation modeling is not a new type of approach as the first attempts belong to Cederman (1997) and Axelrod (1997): both authors have actually designed artificial polities as agent-based systems interacting with each other in dynamic contexts. Though initially oriented toward explanations of

³ For a detailed classification of the existing elite modeling views, see: Gilens and Page, 2014.

conflict emergence, polity simulation modeling has addressed many other research issues concerning the state as a political organization, like corruption, political clientelism, oligarchy, and inequality.

Artificial polity simulation modeling research has been properly introduced by Claudio Cioffi-Revilla and his collaborators, who developed several models able to explain the emergence and evolution of polities in different ancient geopolitical areas, the structure and the structural dynamics of a polity or the emergence of conflict: *SimPol Model* (Cioffi-Revilla, 2009), and *RebeLand Model*, (Cioffi-Revilla and Rouleau, 2010) are among most relevant approaches to artificial polity simulation. Other approaches combine agent-based modeling with theories of political sociology, political economy or social complexity with the aim of operationalizing issues like decision-making in political regimes (Riolo et al., 2002), security issues (Axelrod, 2004), political hierarchies and identity (Lustick et al., 2010), oligarchs' ideology and their influence on political decision-making (Wright and Sengupta, 2015), interests groups (Johnson, 1998), voting in artificial political societies (Mitsutsuji, 2012), political elites and their role in the emergence of national states (Cederman, 1997; Cederman and Girardin, 2007), and conflict emergence (Epstein and Axtell, 1996; Cioffi-Revilla and Rouleau, 2009, 2015; Lang and DeSterck, 2012)⁴.

3. Simulation-based Elite Modeling: Our Approach

Simulation-based modeling is defined and employed by the disciplines at the border between social sciences, computer sciences, and the sciences of the artificial, like Social Simulation, Computational Sociology, and Computational Economy. Before defining the artificial polity, one might need to make a conceptual difference between the terms we use in this paper, like “simulation”, “simulation-based modeling” and “agent-based system”, on the one hand, and some of the terms already introduced in the sections above, namely the “simulated democracy”, on the other hand. While the terms “simulation”, “simulation-based modeling” and “simulated behavior” employed in modeling research concern a specific research methodology, namely the modeling based on artificial (software) agents and systems, the term “simulated democracy” concern a qualitative characteristic of the political behavior of a specific social segment, the political elite in this case. While the methodologic term of “simulated behavior” concerns a specific technology of the artificial systems (that is, agent-based systems which simulate the behavior of real social systems) able to explain the behavior of an artificial system, the qualitative term “simulated democracy” concern a (deliberately) assumed political behavior which falsifies the claim of democratic behavior.

An *artificial polity* can be defined as an agent-based system which reproduces by computational means the organization (structure and operation) of the state. As the architecture of this agent-based system is designed, the relationships between individual agents (citizens) and institutional agents (institutions) are defined and made operational. Such a computational system actually models the organization and operation of a real state. It is used to simulate (that is, to reproduce the behavior of a real system in the computational environment by means of computational design, resources and technologies) the operation and behavior of a real state: each run simulates the operation of the state for a specific period of time (simulated time). The outcomes of these simulations are then analyzed so that the designed architecture (structure, relationships and operation) could be evaluated and compared with the performances, operation and outcomes of real state.

⁴ For an extended presentation of polity modeling by agent-based models, see Chapters 17-20, in: Voinea, C.F. (2016) *Political Attitudes: Computational and Simulation Modeling*, John Wiley & Sons, Ltd., Chichester, UK.

The *Artificial Polity Model* (Voinea, 2017) has been applied for the operationalization, modeling and simulation of the concepts of *elite* and *elite variability* as defined by John Higley (2008), *elite settlements* as defined and described by Michael Burton and John Higley (1987), and the concept of *simulated democracy* as defined and described by Gyorgy Lengyel and Gabriella Ilonszki (2010, 2012).

Early agent-based simulations of polity and elites provided insight in elite operational definition and operational design (Voinea, 2013a), while currently developed simulation experiments provide insight in the design of the polity-elite relationship with the aim of explaining the type and dynamics of the democratic regimes in the CEE countries after 1989 (Voinea, 2013b, 2015a, 2015b, 2015c, 2017).

4. Agent-Based Elite Simulation Modeling: Research Questions

The class of elite simulation models described in this paper is aimed at providing answers to the following research questions:

- (i) How to achieve an agent-based operational description, distribution and configuration of political and non-political elites? – The modeling approach presented in this paper employs an attributional description of typical elite agent's characteristics.
- (ii) Operationalization of the relationship between elite and polity: The attributional description includes both type, and task, action, communication characteristics. It helps identifying the different types of elites (political, business, academic), discriminating between their power positions (i.e., state-command, economic, academic, other), and studying the dynamics of their influence on the polity (institutional) outcomes (i.e., priority, control).
- (iii) Define measures of the efficiency of (i) elites' influence on the polity outcomes, (ii) elite settlements.

5. The Artificial Polity Model: A Political Methodologic Research Approach to Elite Study

As an alternative to the classical modeling approaches developed by means of rich and diverse survey data, our modeling approach employs the simulation based on artificial agents. Modeling the state as an artificial polity is one important option in achieving a general goal, namely the polity operational architecture, and a specific goal, that of explaining the post-communist Central and Eastern European political regime dynamics.

The main idea is to model the polity with an artificial system including (a) an artificial society, (b) an artificial state, and (c) an artificial political culture. Comparative analysis between the classic artificial territorial model and the artificial polity model as introduced in our paper reveal that the former explains emergence of political change by means of conflictual structural components driven by mechanisms and processes specifying the nature and evolution of conflict, while the later explains the emergence of political change by means of political culture mechanisms and processes.

Classic approaches define the "polity" as a geographically-situated macro agent and simulates its operation with an agent-based system (*SimPol* Model: Cioffi-Revilla, 2009; *RebeLand* Model: Cioffi-Revilla and Rouleau, 2010).

As a difference from the *RebeLand* Model, *Artificial Polity (APM)* models the reaction of the general population toward public policies at the political culture level by means of the individual agents' political attitudes toward the public policy: it simulates the explicit relationship between the operation of a typical

polity, on the one hand, and mass political attitudes toward governmental action (public policy), on the other hand.

While inspired by the same concept of basic polity (Almond et al., 2006), the **APM** model approaches the “issue-stress-policy” response cycle in an open polity on a political culture basis: the model aims at explaining the dynamics of the relationship between the polity agent (macro agent) and the general population agents (individual agents) by value system, political beliefs, political attitudes, and norms which could specialize the specification of the polity type: autocracy, democracy, semi-democracy.

5.1 Definitional Perspective

Anthony Downs has introduced an economic model of democracy (Downs, 1957). Robert Dahl defines democracy with the term “polyarchy”, which represents an electoral regime with four main components: “*universal, active suffrage, universal, passive right to vote, free and fair elections and elected representatives*” (Dahl, 1989: p.221). Schumpeter (1942) views democracy in the post-autocratic regimes as a competition for political leadership based on electoral rules: legitimacy and authority could thus be acquired by abusing the electoral rules and the voters’ free choice of political candidates for office. Richard Rose identifies the challenges which the ex-communist countries had to face in 1990 immediately after the demise of communism: he assumes that state-building and democracy-building would represent a too hard problem to be solved simultaneously by the newly-appeared democratic regimes in Central and Eastern Europe after the fall of the iron curtain (Rose, Mishler and Haerpfer, 1998).

Fuchs and Klingemann (1995), Fuchs, Klingemann and Zielonga (2006), Fuchs and Roller (1998) Klingemann (2013), and Wolfgang Merkel suggests a polity conceptual architecture of processes (Merkel, 2004). This idea allows for the consideration of polity modeling in terms of processes and mechanisms, and intensive use of generative data. The classic functional model based on structural components and their associated functions is replaced by a dynamic process-based model. This conceptual architecture provides for a more general specification of the democratic polity: it accounts for *how* a process is generated instead of giving an account on *what* particular component(s) produces or triggers *which* process. The focus shifts from the notion of “function” to the dynamics of the relationships between processes and their context.

While Merkel’s view is explicitly constructivist with respect to a polity model, Welzel’s view upon polity modeling is rather implicit: he assumes that there is an interdependence relationship between the democratic polity and the citizens’ effective political participation in a real democracy (Welzel, 2013). Political culture thus appears as implicitly necessary for an operational approach on the study of the polity workings.

The idea is relevant for approaching the issue of political culture in the domain of polity modeling research: it proves the intrinsic relationship between political culture and polity operation. Moreover, it shows how to build-up the polity model which could explain the role political culture plays in maintaining and evolving the polity as a democracy.

Our artificial polity-based modeling approach to elite studies builds upon the theories of *embedded democracy* (Merkel, 2004) and *human empowerment* (Welzel, 2013) and further develops them from an operational perspective. As political culture theory has not provided so far for a modeling approach, even less for a computational modeling approach, ours tries to suggest a simulation-based one.

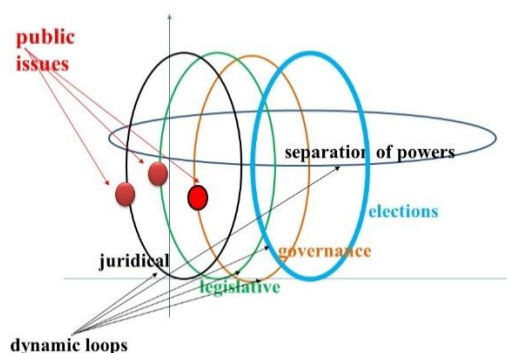
5.2 The Conceptual Model

The model of *artificial polity* has been inspired by the concept of “embedded democracy” (Merkel, 2004). In our approach, the polity model combines *bottom-up* and *top-down* architectural components into a

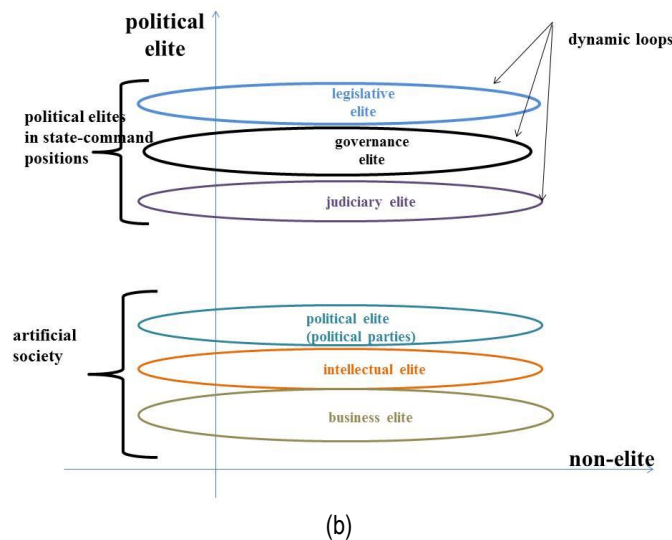
unitary complex system. Its internal working is specified in terms of processes achieving the essential aspects of polity operation: (1) the separation of powers and their interconnection by a system of checks and balances, (2) the horizontal and vertical communication in the polity between the political institutions and the citizens, and (3) the effective power of governance.

The architecture of the artificial polity is designed to work as a set of processes called “dynamic loops”: their operation is continuous during a simulation run. These dynamic loops describe the fundamental processes in any polity, namely the governance, the legislative, the operation of the justice system, and the operation of a communication system called generally the “media”. Following the conceptual model of an embedded democracy as defined by Wolfgang Merkel, this set of fundamental processes also include dynamic loops for continuously checking the separation of powers, elections (see **Figure 1a**). The outcomes and the internal settings of these dynamic loops are related to one another so that they altogether operationally define the model of a state organization under a political regime. In our approach, the artificial polity is designed with two generic versions of political regimes: *autocracy*, and *democracy*. Each version is characterized by the same dynamic loops, however the relationships between them as well as their specific outcomes are characteristic for the type of the polity which is simulated. The dynamic loops are designed to manage the *public issues*, that is, issues like *policies* (i.e., outcomes of the governance process), *laws* (i.e., outcomes of the legislative process) and *justice outcomes* which impact the citizens at the society level, providing for the emergence of complex situations of social unrest or even social conflict. The integrated approach of the public issue emergence and management within the operation of the artificial polity (Almond et al., 2006) has been already achieved in other models (see the *SimPol* Model, Cioffi-Revilla, 2009): as a difference, our approach achieves this type of dynamics in a model based on the concept of *embedded democracy*.

This model achieves the operational definition of the elite in terms of the polity structural level which they influence (**Figure 1b**). Elite thus include several structural types: elite which are in state-command positions (as members of the Parliament, Government, Juridical system and courts), economic (business elite), academic, and others. The specifications of the elite types in the experimental settings would thus help in achieving the explanation of the role they play in the polity operation in terms of their embeddedness in the very structure and workings of the polity.



(a)



(b)

Figure 1.

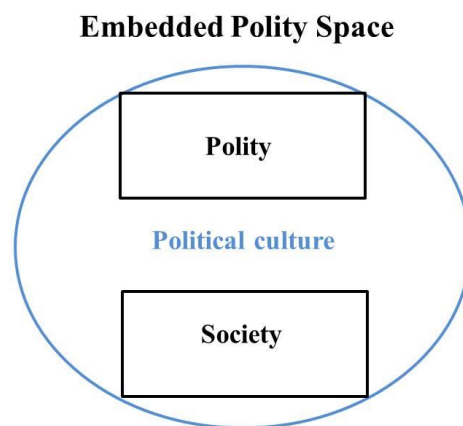
Artificial state organization by (a) dynamic loops, and (b) elite types.

The *bottom-up* part of the polity model architecture is constituted by the *society* component of the polity model. This site of the model has a dynamics of its own acquired on the basis of individual agent interactions at the social level. The *top-down* part of the polity model architecture is constituted by the state organization on several layers: legislative (Parliament), administrative (Government), justice (Judiciary System), and the media⁵. The processes evolving in this part of the model have operational connections to the social layer by means of specific mechanisms. The generic task of any process in this part of the model is to control the (emergent) structures at the polity level (macro), and at the society level (micro). The polity model operates the entire state as a dynamic entity in a set of connected dynamic loops. The artificial polity undergoes a change as its internal process configuration is modified by the elites and/or by the emergent structure(s) generated by the collective action(s) of the individual agents at the society level.

5.3 Dynamic Space Model

In our definition, the artificial polity is a construct which embeds three interaction spaces, that is social, political and cultural (**Figure 2**). The model introduces the embedded dynamic space of a polity which is described in terms of interaction spaces: (a) social interaction space (modelled as an artificial society), (b) political interaction space (modelled as an artificial polity), and (c) political culture space (modelled as an artificial political culture).

⁵ With reference to Figure 1, p.37 in: Merkel, W. (2004) Embedded and Defective Democracies, *Democratization*, Vol.11, No.5, December 2004, pp.33–58.

**Figure 2.**

The artificial polity dynamic space includes political, societal and cultural components.

One main contribution of our modeling approach consists in defining and operating the dynamic loops in political culture terms. A second relevant contribution is the definition and description of agents such that “elites” can be operationally defined. The elite agents achieve an attribution-based description in terms of *features* and *traits*⁶. The attributional description has been used in the early simulation experiments reported in corruption simulation studies (Voinea, 2013a, 2013b, 2014, 2015b). This type of operational description provides for a simple description of the polity and elite agents and dynamics. A third contribution concerns the achievement of polity dynamics in operational terms: each process in the polity definition is described by means of a dynamic loop. The communication between the architectural layers is achieved in terms of the emergent issues depending on each dynamic loop describing the fundamental processes (architectural layer) in the artificial polity: “policy” (governance dynamic loop), “law” (legislative dynamic loop), “rule” (judiciary dynamic loop), and “news” (media communications dynamic loop).

5.4 Conceptual Modeling of the Interdependence Relationship between Polity and Elites

The artificial polity has an institutional representation: the fundamental institutions are represented by means of different types of agents with specific capabilities and assigned tasks.

The model includes the types of agents: individual and elite agents, institutional agents, and resources agents. The elite agents are typical for each layer in the polity architecture: they are assigned to the dynamic loops representing the operational description of the dynamic processes which make up the polity workings (as described in **Figure 1**).

The operational principle is a power struggle: elite aim to achieve and maintain power both in relation with elite and with the non-elite agents.

The model employs several attributes and/or mechanisms which regulate the power struggle dynamics during the elite interaction processes: *priority* (power position), *control* (operationalized in terms

⁶ For more details on this technique see Robert Axelrod (1997) The Dissemination of Culture: A Model with Local Convergence and Global Polarization, *Journal of Conflict Resolution*, 41(2), 203-226.

of “coercion” for autocratic regimes, and in terms of “legitimacy” for the democratic regimes), and *privileges*. Elites aim at increasing their power by means of (i) increasing their priority (information, property, economic resources), (ii) increasing their capacity of controlling domains/institutions, and/or (iii) increasing (the number and level of) their privileges.

6. Elite Agents: Definition, Description and Operationalization

There are several types of interacting agents: individual agents, organizational agents (political parties), and institutional agents (i.e., institution agents defining institutional powers in a democratic polity, like the legislative institution (Parliament), the governance institution (Government), and the judiciary institutions (the Courts).

The computational and operational definition of each type of agent is based on the classes of characteristics for each level of interaction and for each type of polity (i.e., autocratic, democratic).

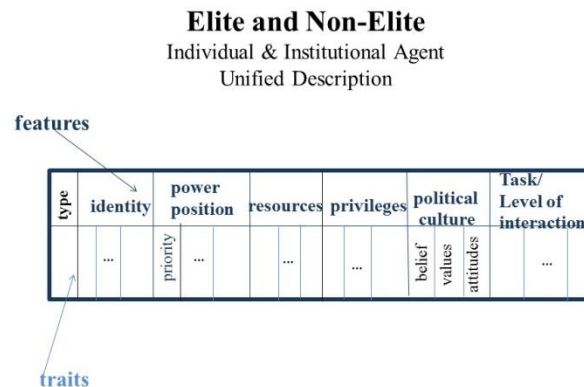


Figure 3.

Agents are identified by an attributional description based on features and traits.

In order to model the social, political and cultural aspects of the polity and its dynamics, the general structure of the agent includes four classes of features: ideological identity, priority, resources, privileges, interaction characteristics (level of interaction, tasks, control area, rules of interaction, level of priority of interaction) (Figure 3).

7. Early APM Elite Simulations: Experimental Setup

The **APM** class of models are implemented in NetLogo⁷. Early simulations have been developed with an APM version in which both the elite and the non-elite agents have an attributional description which helps identifying their type and behavioral dynamics. Early **APM** models, called *Briberyscape*, *Baronscape* and *Privilegescape*, have been employed in the study of political corruption on a political culture basis in both autocracy and democracy polity models (Voinea, 2013a).

⁷ NetLogo © 1999-2016 Uri Wilensky is available in the public domain at: <https://ccl.northwestern.edu/netlogo/>.

In this early APM version, the experimental setup includes an agent-based system with two structural components: an artificial society and an artificial political culture. The artificial polity is implicitly described by means of elite types and their associated tasks (see **Figure 4**). In order to avoid high complexity of the experimental settings, the system includes a dichotomic description of the elites: elite and non-elite. The *elite* is described by three types of institutional agents: politicians representing Parliament members, bureaucrats representing Government members, and magistrates representing the members of the Judiciary system and the courts. The *non-elite* is represented as citizen (individual) agents at the artificial society level.

The artificial polity is thus designed as a structural system in which (i) different institutional elite agents perform institutionally specific tasks, and (ii) individual (non-elite) and institutional (elite) agents interact at the society level. Their interaction is described in political culture terms by means of beliefs (trust in state) and political attitudes toward the state. The model is aimed to achieve an operationally efficient description of the elite agents such that they can influence the polity outcomes and eventually provide for polity change.

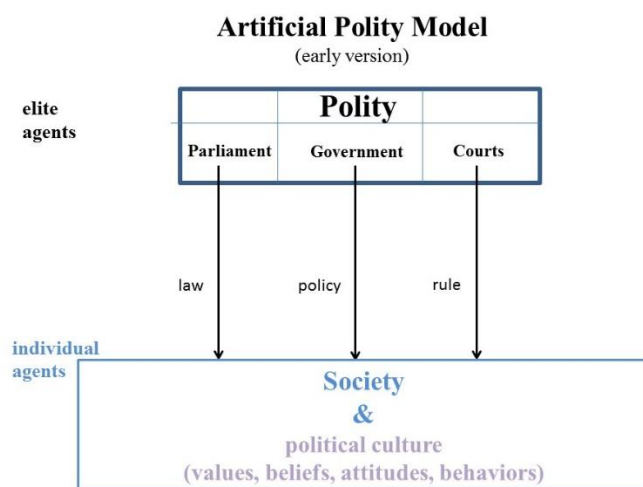


Figure 4.
Artificial Polity Model (early version).

The model aims to explain the polity change and the relationship between elite and non-elite agents in terms of a struggle for power. The non-elite agents are characterized by their belief about the state (trust in state) and also by their political attitudes toward the state, where the state is represented by the elite agents. At the individual level, the non-elite agents have a restricted access to the public resources, the access to the public resources being controlled by the elite. As the resources diminish at the individual level, the citizens experience a change in their beliefs with regard to the state (i.e., elite in the state-command positions): as their access to resources remains restricted and conditioned by the elite in state-command positions, they prove lower trust in the state. Their belief change provides, in turn, for the emergence of a dynamic change in their political attitudes toward the elite. The model employs a cognitive dissonance mechanism which explains the polity change in terms of change in the non-elite's political

attitudes toward the state. As the polity is controlled at the top institutional level by elites, they decide for a polity change which safeguards their power positions. As the degree of trust in state decreases in non-elite agents, the elite agents perceive an increase of the pressure at the societal level. As an effect of the high levels of social pressure (described in the simulations as low levels of trust in state), the elite agents provide for a polity change in terms of political regime change from autocratic (centralized) to a democratic (open) regime.

The emergence of political corruption in simulating elite behavior with the *Briberyscape Model* is explained by the elite behavioral response to a decrease in citizens' trust in state. The model explains the phenomenology of political corruption in both autocratic and democratic settings.

7.1 Elite Simulation Experiments:

7.1.1 Elite dynamics in autocracy simulations settings based on the artificial polity model

The fundamental institutions are controlled by the top (elite) level, which make decisions for the polity workings. Both top polity institutions (i.e., legislative, governmental, judiciary and media) and the public resources are centralized systems controlled by the elite (i.e., elite in state-command positions). The dynamics of the artificial polity is induced by the dynamics of the individual attitudes toward the state: as the public resources support the public welfare, the attitude is positive (mid-valued trust-in-state); as the public resources diminish quantitatively and the level of public welfare decreases, the attitudes become negative and strongly negative (low-valued and very low-valued trust-in-state). The artificial polity operates on the dimension of political attitudes of the citizens agents (non-elite agents) toward the state: non-elite change from a high level of trust in state to low levels of trust-in-state. This change induces a change in the elite behavior, which decide to change the political regime from autocratic (centralized and restrictive) to democratic (open and permissive) and allow the free access of the non-elite agents to the public resources. (see **Figure 5**).

The simulations are performed with an agent-based system in which both elite and non-elite have a unitary description (as described in *Section 6*): the differences are provided by the priority level, that is, the elite have higher priority than non-elite and thus get free access to the public resources. Another difference is achieved by means of the capacity of control as the elite have higher degree of control over the top institutional (polity) level, while non-elite do not achieve any kind of control either on polity outcomes or on the public resources.

7.1.2 Elite dynamics in democracy simulations settings based on the artificial polity model

The fundamental institutions in a democracy achieve the condition of the separation of powers such that the elite at the top institutional (polity) level cannot fully control the access of the non-elites to the public resources. The simulations are performed with an agent-based system (see NetLogo interface in **Figure 5**) in which elite and non-elite are differentiated by their features of priority and control. The elite influence on the polity outcomes are described in political culture terms and context: as non-elite's political attitudes toward the elite change from acceptance to rejection, the elite become corrupt: they accept bribe in exchange of the access to public resources. *Briberyscape* model achieves an explanation of political corruption in terms of the struggle for power between elite and non-elite (individual citizens) agents (**Figure 5**): the political culture issues, like beliefs and political attitudes are evaluated in order to emphasize the dynamics of the relationship between elite and non-elite as well as the polity change process (Voinea, 2013; Voinea, 2017).

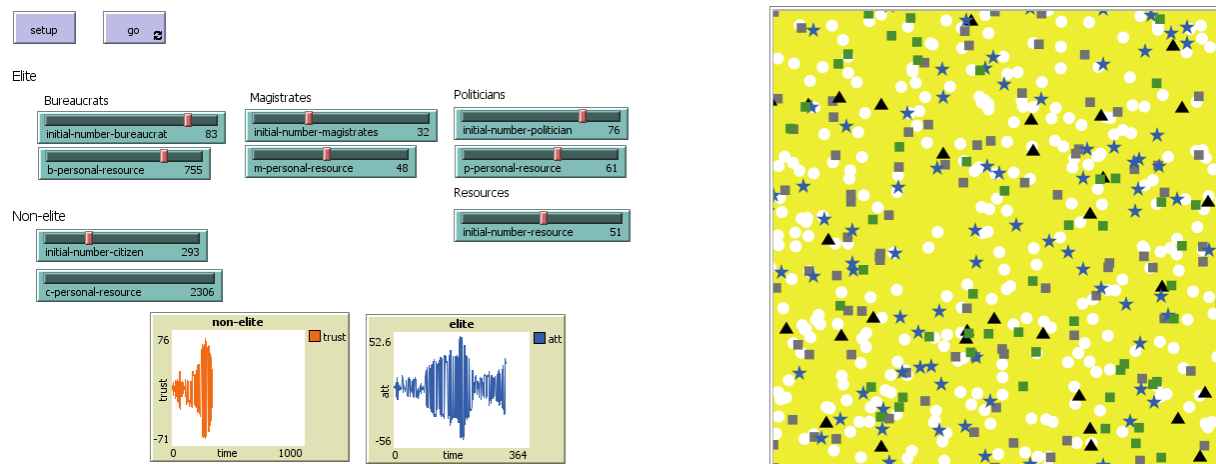


Figure 5.
Artificial Polity Model.

The dynamics of the attitudes toward the state of the non-elite agents induce a change in the elite agents' behavior which finally results in the change of the polity type from "autocracy" to "democracy".

Interface. (left icons) The agent-based system consists in agents of different types and task assignments: *elite* agents (represented graphically with triangles, squares and stars) and *non-elite* agents (represented graphically with circles). The elite includes institutional agents (governmental, legislative, judiciary) and non-elite agents (citizens) (interface left side). The model includes *public resources* to which the access is controlled by the elite. The *Artificial Polity* appears as a virtual space (right icon) in which elite agents (bureaucrats, politicians and magistrates) interact with non-elite agents (citizens). The access of the non-elite agents to the public resources is controlled by the elite agents. As they interact with each other and with the elite agents, the non-elite agents consume their individual resources and need to refresh them by accessing the public resource and extracting individual incomes. The access of the non-elite agents to the public resources is controlled by the elite agents, who constrain the access. As non-elite agents' welfare decreases, they turn their attitudes toward the state into strongly negative attitudes.

Operation (simulation-based modeling of a real polity): The relationship between elite and non-elite as well as the polity outcomes are modelled in political culture terms (beliefs and political attitudes): as the non-elite agents reach low levels of trust-in-state, they change their attitude toward the state from mid-positive to strongly negative (orange plots), the elite agents decide to relax the access of the non-elite agents to the public resources (blue plots), (see down-left corner plots).

7.2 Elite Simulation Performances and Limitations

Notwithstanding the operational efficiency achieved by means of the attributional elite description, the study of elite behavioral dynamics is limited by the reductionist approach in what regards the modeling of the relationship between *polity* and *elite dynamics*: the model assumes a polity change as a change from a political regime to another from a set of two political regimes only (autocracy, democracy). On the other hand, the political culture context achieved by means of political belief and attitude toward the elite has also induced limitations on the performances and the explanative power of the early version of the Artificial Polity Model. Moreover, this early version does not give an account of the struggle for power within the elite itself (for example, between the elite in power positions and the elite in opposition), reducing it to the struggle for power between elite and non-elite. Elite attributional description also needs substantial improvements such that it could allow for the complex description of the elite phenomenology like *elite*

settlements and *elite convergence* in various types of autocratic and democratic settings: in this early version, the model cannot account for the elite dynamics in terms of settlements, negotiations, convergence, united or disunited elite, etc. For these reasons, which belong rather to the political science domain of the modeling approach, but also for reasons concerning the computational and simulation modeling which belong to the methodology domain of this approach, the elite simulation studies have been extended by means of an advanced *artificial polity model* which proved better performances in tackling the limitations emphasized by the early model.

8. Advanced Elite Simulations: Experimental Setup and Scenarios

Artificial Polity Model is an agent-based system whose architecture consists in three structural layers: *polity* layer as the layer describing the political establishment, leadership and institutional architecture, *society* layer describing the societal issues mainly the civic rights and liberties, and the *(political) culture* layer meant to describe the social and political perception of the polity operation and the (tendency for) social and political action. The artificial polity model consists in a hierarchy of processes which have both vertical and horizontal relationships (see **Figure 1**). This architecture achieves a better operational description of the concept of *embedded democracy* as defined by Wolfgang Merkel (2004). Advanced versions of the Artificial Polity Model have a structural architecture in which elite, non-elite and institutions are described as *agents*, while processes are described as *dynamic loops*.

Each dynamic loop is based on a so-called “engine”: the *public item*. The public items are institutional basic outcomes: for example, a public policy (policy item) is provided by the Government, and a piece of law (legislative item) is provided by the Parliament.

A public item is elaborated by the elite in top-institutional positions. A public item may be issued by elites in conditions of consensus or lack of consensus and it could provide for the emergence of either (partial or full) consensus or conflict amongst elites themselves. Once provided in the public space, a public item is evaluated by the individual agents at the society level and it could provide for a decrease of citizens’ degree of trust in the institution (Government, Parliament, Judiciary and Courts) which has provided for the public item (see **Figure 6**). In this situation, a *public issue* (Almond et al., 2006; Cioffi-Revilla, 2009) emerges. In case of democratic polity, the Artificial Polity Model models this situation as *social pressure*, that is, the public item stimulates the increase of social pressure up to the limits of social unrest (social pressure scenario). In case of autocratic polity, this situation is modelled differently since there are few or no political liberties and the individual agents do not overtly react to it unless a major political regime change occurs (political change or revolution scenario).

Depending on the outcome of this dynamic evaluation of the public items at both elite and citizen levels, the polity dynamics is influenced such that its outcomes could be changed in ways which could be hardly predictable due to the complexity of both context and agents’ description and operation.

In our approach, the social pressure scenario is approached on a political culture basis in which components of the value and belief systems are shared by both the elites and the citizen agents. In the democratic polity case, the institutional agents provide for civic and political rights and liberties. The citizens are able to improve their capacity of reaction to public items and use their rights and liberties to make the elite accept their positions with respect to the public items. The capacity of reaction to elite’s actions (that is, public items) is modelled as degree of empowerment, a concept which has been inspired by the concept of human empowerment (Welzel, 2013) and the studies on materialist and postmaterialist culture in Eastern European societies (Inglehart and Welzel, 2005; Welzel, Inglehart and Klingemann, 2003; Welzel and Inglehart, 2009). In this respect, the point the artificial polity model makes by employing the political culture

theories concerning the value change at the society and polity levels is that of operationalizing the relationship between elite and masses in a democratic polity as a deliberative, participative relationship.

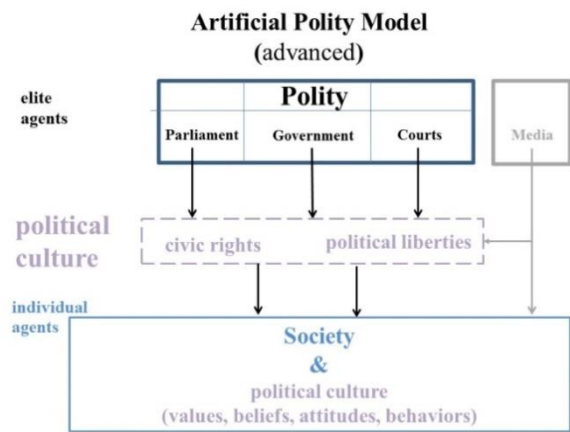


Figure 6.
Elite circulation becomes elite reproduction if rights and liberties are acquired by abuse of law and bribe instead of merit.

To this operational aim, the Artificial Polity Model employs an improved attributional description of the agents: it includes more features which capture the capabilities of both the elites and the non-elite agents to tackle the social pressure by political culture means (**Figure 7**). The elite agents are differentiated by type and perform specific tasks: governance, legislative, justice, media communication. As the fundamental institutions in the polity (i.e., represented by the elite agents in state-command positions) provide for political liberties and civic rights, the degree of *social pressure* might increase as the citizens perceive and evaluate the public items.

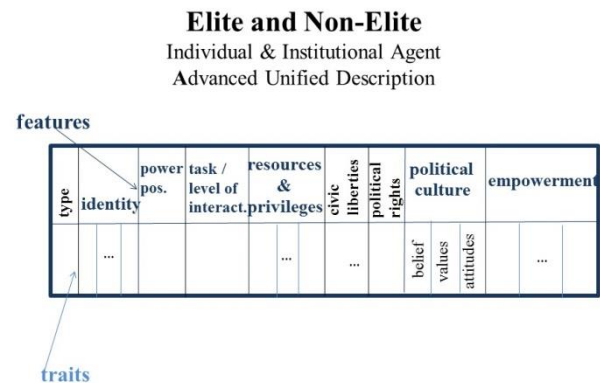


Figure 7.
Extended attributional description of elite and non-elite agents aimed at including methodological capabilities of achieving polity dynamics in political culture terms.

Social pressure (SP) provides for a complex context which has a decisive influence on the elite behavioral dynamics. Elite action is modelled as context-dependent, where the elite action contextual factors include several structural components: the type of polity (autocracy or democracy), the degree of consensus among the (factions of) elite in power position (elite united or disunited), the level of negotiations amongst the elite-in-power and the elite-in-opposition (partial agreement, no-agreement, conflict which employs the non-elite agents as resources used in the negotiation process), the level of civic rights and liberties in the individual (citizen agent), and the degree of empowerment of the citizen agent.

In order to tackle the complexity of social pressure context, the model introduces two measures: *frequency* and *strength* of the social pressure context.

For approaching the influence of the type of polity (autocratic, democratic) on the elite behavioral dynamics, the model introduces two pairs (co-structural) measures of the elite capacity to react to the social pressure: elite *legitimacy* (for the democratic polity) and elite *authority* (for autocratic and totalitarian polity).

Artificial polity outcomes are modelled as coercive (autocratic polity) and deliberative-participative (democratic polity). Elites' capacity to influence these outcomes make the subject of the simulation scenarios. The simulation modeling architecture includes the modeling of several aspects and dimensions which make up some relevant scenarios for the elite studies: (i) the political legitimacy and /or authority as a means of achieving and maintaining political power by the elites in the young democracies of the Central and Eastern Europe after 1989; (ii) the use of force and types of coercion in both autocratic and democratic regimes of the CEE in the context of the emergence of new elite after 1989.

8.1 Elite Behavioral Dynamics in Simulated Democracy Scenarios

The concept of "simulated democracy" (Lengyel and Ilonszki, 2010, 2012) has been operationalized by means of the dynamics of elite's rule compliance behavior.

In our experimental scenario, elite break the democratic rules with the aim of achieving and/or maintaining power. The operationalization of *simulated democracy* concept is based on the dynamics of the difference between the proportion of elite which comply with the democratic rule, on the one hand, and the proportion of the elite which does not comply with the democratic rule but only claims compliance. The simulations show the relationship between (a) the loss of legitimacy, and (b) the behavioral tendency of democratic rule breaking in elite which experience the loss of political power.

The simulations with our Artificial Polity Model show that the simulated democracy phenomenon is strongly tied to the elite struggle to improve their degree of legitimacy in societies and polities which, on the one hand, have a low level of economic development, and, on the other hand, emphasize strong attachment to materialist values (Pavlović, 2015; Boda and Medve-Bálint, 2014; Voinea, 2014).

The low level of human empowerment (Welzel, 2013) induces a low capacity to detect defecting democratic behavior. In this context, our model employs a mechanism of value dissonance (Lazic and Cvejic, 2007; Gabbay, 2013) which explains how true and fake democrat elite agents emerge and evolve in post-communist polity settings.

8.2 Elite Settlements

Elite settlement is a concept defined by Higley and Burton as:

"[...] broad compromises among previously warring elite factions, resulting in political stability and thus providing a necessary precondition for the sustained practice of representative democracy"

(Higley and Burton, 1987)

Elite settlement is operationalized by means of the social pressure concept defined above. The difficulty in operationalizing elite settlement reside in the complexity of the circumstances as mentioned by the authors, namely the “major crisis” (Burton and Higley, 1986: p.14). Another difficulty resides in the characteristics of the elite settlement: the short time of arriving to a settlement, the phases in which a settlement occurs (brief initial agreement, longer-term completion), the secrecy of settlement, and “face-to-face negotiations among leaders of major elite factions” (Burton and Higley, 1986: p.16).

Elite settlements emerge as the elite reach consensus with regard to rule compliance, elite identity (mutual recognition), and crisis (i.e., social pressure). The most interesting experiments are those concerned with crisis situations described in terms of social pressure. In situations of social pressure, elite might experience a legitimacy loss. This context allows for the emergence of an elite settlement based on the mobilization of non-elite (masses) and/or other types of elite (business elite, political party elite, academic elite, etc.).

In autocratic (totalitarian) regimes, in situations of social pressure generated by a public policy, elite settlement might occur with regard to- or on the basis of coercive action. This might result in elite maintaining power or in elite losing power and in the emergence of a political regime change.

9. Conclusions

One main advantage of using an artificial polity as a simulation tool and medium is that of reproducing in the virtual environment the whole political system: so far, simulation modeling research was focused on reproducing the economic (market) systems in the virtual medium. Our approach extends this view by constructing a multi-layered polity system: the multiple layers include the political leadership and institutions, economy and governance, society and culture. It is only such context that could allow for a believable simulation of the roles elites play in the workings, outcomes, performances and dynamics of the state no matter what type of political regime and leadership it has.

Efficiency is provided as increased capacity of reproducing interaction capacity and dynamic evolution of political systems under the influence of elites.

One difficult problem concerns the construction of the groups (factions) of elite agents: the unified attributional description achieves good performances in operationalization of the society and culture layers. However, elites need to be differentiated on several criteria: elite-in-power vs. elite-in-opposition, political elite vs. business elite, political party elites, etc. Moreover, the elite behavioral dynamics needs also to be differentiated since elites use different circulation and reproduction paths: while political elites emerge from the electoral cycles, other types of elites are not elected, but nominated. Notwithstanding this important difference, elites succeed to get power positions and to influence polity outcomes. In a simulation model, however, this aspect increases the complexity of the polity dynamic space.

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